

## WHAT IS CLAIMED IS:

1           1.     A method for modifying printing based upon direct on-the-fly media  
2 characteristic parameters, comprising:  
3           on-the-fly directly measuring at least one print media characteristic  
4 parameter; and  
5           modifying in real-time printing by a print device in response to the at least one  
6 on-the-fly directly measured print media characteristic parameter.

1           2.     The method of claim 1 wherein the on-the-fly directly measuring  
2 comprises scanning the media with a scanner.

1           3.     The method of claim 2 wherein the scanner is a CCD camera.

1           4.     The method of claim 2 wherein the scanner is used to determine  
2 whether toner is properly adhering to the media.

1           5.     The method of claim 4 wherein the scanner is a CCD camera.

1           6.     The method of claim 1 wherein the modifying comprises applying a  
2 surface coating on the media before printing.

1           7.     The method of claim 6 wherein the surface coating is applied to only  
2 one side of the media.

1           8.     The method of claim 6 wherein the surface coating is applied to both  
2 sides of the media.

1           9.     The method of claim 1 wherein the modifying comprises hot rolling the  
2 media before printing.

1           10.    The method of claim 9 wherein the hot rolling comprises flattening  
2 rough fibers and drying the media.

1           11.    The method of claim 9 wherein the hot rolling is implemented after the  
2 application of a coating to cure the coating.

1           12.    The method of claim 9 wherein the hot rolling is implemented prior to  
2 the application of a coating to lower the moisture content of the media, the lowering  
3 of the moisture content improving coating coverage and adhesion.

1           13.    The method of claim 1 wherein the on-the-fly directly measuring further  
2 comprises measuring a quality of print for the media.

1           14.    The method of claim 13 wherein the quality of print comprises print  
2 marking adhesion.

1           15.    The method of claim 14 wherein the print marking is toner.

1           16.    The method of claim 13 wherein measuring comprises detecting the  
2 quality of print using at least one scanner.

1           17.    The method of claim 16 wherein the scanner is a CCD camera.

1 18. The method of claim 14 further comprising applying a coating to  
2 promote adhesion when the print marking adhesion is poor.

1 19. The method of claim 1 wherein the modifying further comprises  
2 adjusting halftone screens for media surface and absorption characteristics.

1 20. The method of claim 19 wherein the halftone screens are adjusted for  
2 spatially varying dot gain.

1 21. The method of claim 19 wherein the halftone screens are adjusted for  
2 excessive dot gain.

1 22. The method of claim 19 wherein the halftone screens are adjusted to  
2 prevent bleed through for thin media.

1 23. The method of claim 1 wherein the measuring comprises detecting  
2 print quality, the method further comprising adjusting toner concentration when the  
3 print quality is poor.

1 24. The method of claim 1 wherein the measuring further comprises  
2 measuring mottle effects in the media.

1 25. The method of claim 24 wherein a scanning element is used to detect  
2 the mottle effects.

1           26.    The method of claim 25 wherein the scanner comprises an array of  
2 scanning elements placed early in the media path.

1           27.    The method of claim 26 wherein the array is a one dimensional array.

1           28.    The method of claim 26 wherein the array is a two dimensional array.

1           29.    The method of claim 1 wherein the measuring further comprises  
2 illuminating the media from behind using a bottom light source and collecting a  
3 resulting transmitted image using scanning elements.

1           30.    The method of claim 1 wherein the measuring further comprises  
2 reflecting light off of the media using a top light source.

1           31.    The method of claim 1 wherein the measuring further comprises  
2 illuminating the media from behind using a bottom light source and collecting a  
3 resulting transmitted image using scanning elements and reflecting light off of the  
4 media using a top light source.

1           32.    The method of claim 1 wherein the modifying comprises adjusting a  
2 print algorithm.

1           33.    The method of claim 32 where the print algorithm is adjusted to  
2 compensate for mottle in the media.

1           34.    The method of claim 32 wherein the detection of mottle in the media  
2 drives a local coating system for selectively applying a coating on the media.

1           35.    The method of claim 1 wherein the print device is a printer.

1           36.    The method of claim 1 wherein the print device is a digital copier.

1           37.    A print device, comprising:  
2           a marker system for rendering a page layout on a medium; and  
3           a processing system, coupled to the marker system, the processing system  
4 directly measuring at least one print media characteristic parameter on-the-fly and  
5 modifying in real-time printing by the print device in response to the at least one on-  
6 the-fly directly measured print media characteristic parameter.

1           38.    The print device of claim 37 wherein at least one scanner provides  
2 measurements of the at least one print media characteristic parameter.

1           39.    The print device of claim 38 wherein the scanner is used to determine  
2 whether toner is properly adhering to the media.

1           40.    The print device of claim 37 further comprising a coating applicator  
2 coupled to the processor for applying a surface coating on the media before printing.

1           41.    The print device of claim 40 wherein the coating applicator applies a  
2 coating to only one side of the media.

1           42.    The print device of claim 40 wherein the coating applicator applies a  
2   coating to both sides of the media.

1           43.    The print device of claim 37 further comprising hot rollers for hot rolling  
2   the media before printing.

1           44.    The print device of claim 43 wherein the hot rollers flatten rough fibers  
2   and dry the media.

1           45.    The print device of claim 43 wherein the hot rollers are used for hot  
2   rolling the media after the application of a coating to cure the coating.

1           46.    The print device of claim 43 wherein the hot rollers are used for hot  
2   rolling prior to the application of a coating to lower the moisture content of the media,  
3   the lowering of the moisture content improving coating coverage and adhesion.

1           47.    The print device of claim 43 further comprising at least one scanner for  
2   measuring a quality of print for the media.

1           48.    The print device of claim 47 wherein the quality of print comprises print  
2   marking adhesion.

1           49.    The print device of claim 48 wherein the print marking is toner.

1           50.    The print device of claim 47 further comprising a coating applicator for  
2   applying a coating to promote adhesion when the print marking adhesion is poor.

1           51.    The print device of claim 37 wherein the marker adjusts halftone  
2 screens for media surface and absorption characteristics.

1           52.    The print device of claim 37 wherein the marker adjusts halftone  
2 screens for spatially varying dot gain.

1           53.    The print device of claim 37 wherein the marker adjusts halftone  
2 screens for excessive dot gain.

1           54.    The print device of claim 37 wherein the marker adjusts halftone  
2 screens to prevent bleed through for thin media.

1           55.    The print device of claim 37 further comprising at least one scanner for  
2 detecting a print quality, wherein a toner concentration is adjusted when the print  
3 quality is poor.

1           56.    The print device of claim 37 further comprising a scanner to detect  
2 mottle effects.

1           57.    The print device of claim 56 wherein the scanner comprises an array of  
2 scanning elements placed early in the media path.

1           58.    The print device of claim 57 wherein the array is a one dimensional  
2 array.

1           59.    The print device of claim 57 wherein the array is a two dimensional  
2 array.

1           60.    The print device of claim 37 further comprising a bottom light source  
2 for illuminating the media from behind and a scanner for collecting a resulting  
3 transmitted image.

1           61.    The print device of claim 37 further comprises a top light source for  
2 reflecting light off of the media.

1           62.    The print device of claim 37 further comprising a bottom light source  
2 for illuminating the media from behind and scanner for collecting a resulting  
3 transmitted image and a top light source for reflecting light off of the media.

1           63.    The print device of claim 37 wherein scanner provides the processor a  
2 control signal to adjust a print quality measurement algorithm.

1           64.    The print device of claim 63 where the print algorithm is adjusted to  
2 compensate for mottle in the media.

1           65.    The print device of claim 63 wherein the processor upon receiving a  
2 signal indicating mottle in the media drives a local coating system for selectively  
3 applying a coating on the media.

1           66.    The print device of claim 37 wherein the print device is a printer.



1           67.    The print device of claim 37 wherein the print device is a digital copier.

1           68.    An article of manufacture comprising a program storage medium  
2   readable by a computer, the medium tangibly embodying one or more programs of  
3   instructions executable by the computer to perform a method for modifying printing  
4   based upon direct on-the-fly media characteristic parameters, the method  
5   comprising:  
6           on-the-fly directly measuring print media characteristic parameters; and  
7           modifying in real-time printing in response to the on-the-fly directly measured  
8   print media characteristic parameters.

FOR FURTHER INFORMATION, SEE PAGE 29